

ART 34 AMDT

CLAIMS

1. A process for the functionalisation of polyolefins selected from:

- 5       - ethylene/propylene copolymers (EPM) with a molar propylene content ranging from 16% to 50%, and an Mw ranging from 10,000 to 200,000;
- 10       - ethylene/propylene/non-conjugated diolefin (EPDM) terpolymers with a molar ethylene content ranging from 40 to 85%, from 15 to 70% of propylene and 2 to 10% molar of non-conjugated diene, the molecular weights Mw of the EPDM being within the range from 75,000 to 450,000;

15       which comprise the treatment under shear conditions higher than  $100 \text{ sec}^{-1}$ , with a polar unsaturated monomer selected from maleic anhydride and its derivatives, in the presence of at least one hydroperoxide as radicalic initiator, the concentration of hydroperoxide with respect to the polyolefins ranging from 0.1 to 20% by weight.

20       2. The process according to claim 1, wherein the shear conditions are higher than  $1000 \text{ sec}^{-1}$ .

AMENDED SHEET

ART 34 AMEND

- 3  
4. The process according to claim <sup>1</sup>~~3~~, wherein the ethyl-  
ene/propylene (EPM) copolymers have a molar propylene  
content ranging from 20% to 45%.
- 4  
5. The process according to claim <sup>1</sup>~~3~~, wherein the ethyl-  
ene/propylene/non-conjugated diolefin (EPDM) ter-  
polymers have a molar ethylene content ranging from 40  
to 70%, from 30 to 60% of propylene and from 0.5 to  
20% of non-conjugated diene.
- 5  
6. The process according to claim <sup>4</sup>~~5~~, wherein the ethyl-  
ene/propylene/non-conjugated diolefin (EPDM) ter-  
polymers have a molar content of non-conjugated diene  
ranging from 1 to 15% molar.
- 6  
7. The process according to claim <sup>5</sup>~~6~~, wherein the ethyl-  
ene/propylene/non-conjugated diolefin (EPDM) ter-  
polymers have a molar content of non-conjugated diene  
ranging from 2 to 10% molar.
- 7  
8. The process according to claim <sup>4</sup>~~7~~, wherein the ethyl-  
ene/propylene/non-conjugated diolefin (EPDM) ter-  
polymers have a molecular weight Mw ranging from  
100,000 to 180,000.
- 8  
9. The process according to claim <sup>1</sup>~~8~~, wherein the non-  
conjugated diolefins are selected from 1,4-hexadiene,  
1,5-heptadiene, 1,6-octadiene, 1,4-cyclohexadiene, 5-  
methylene-2-norbornene, 5-ethylidene-2-norbornene.
- 9  
10. The process according to claim <sup>8</sup>~~9~~, wherein the non-

AMENDED SHEET

ART 34 AMU

conjugated diolefin is 5-ethylidene-2-norbornene.

10

11. The process according to claim 1, wherein the hydroperoxide is selected from cumene hydroperoxide, hydrogen peroxide, t-butyl hydroperoxide, 2,5-dihydroperoxy-2,5-dimethyl hexane.

5

~~12. The process according to claim 1, wherein the concentration of hydroperoxide with respect to the polyolefins ranges from 0.1 to 20% by weight.~~

11

13. The process according to claim <sup>11</sup>12, wherein the concentration of hydroperoxide with respect to the polyolefins ranges from 0.2 to 10% by weight.

10

12

14. The process according to claim <sup>11</sup>13, wherein the concentration of hydroperoxide with respect to the polyolefins ranges from 0.5% to 5% by weight.

15

~~15. The process according to claim 1, wherein the polar unsaturated monomers are selected from unsaturated carboxylic acids such as esters, amides, acids, metallic salts of acrylic acid, fumaric acid, itaconic acid, citraconic acid and maleic acid, maleic anhydride, esters of vinyl alcohol, vinyl silane derivatives, vinyl imidazole derivatives, vinyl oxazole derivatives, vinyl pyridine derivatives.~~

20

16. The process according to claim 15, wherein the polar unsaturated monomers are selected from maleic anhydride and its derivatives.

25

AMENDED SHEET

ART 34 ANDI

- 13  
17. The process according to claim 1, wherein the quantity of polar unsaturated monomers ranges from 0.1 to 10% with respect to the polyolefins.
- 14  
18. The process according to claim 13, wherein the quantity of polar unsaturated monomers ranges from 0.4 to 1.5% with respect to the polyolefins.
- 15  
19. The process according to claim 1, carried out at a temperature ranging from 80 to 250°C, for a time ranging from 1 to 1800 seconds.
- 16  
20. The process according to claim 15, wherein the temperature ranges from 140 to 200°C and the time ranges from 30 to 600 seconds.

15

20

AMENDED SHEET